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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,827	07/10/2003	Takashi Kumamoto	042390.P9482C	2682
7590	05/07/2004			
Blakely Sokoloff Taylor & Zafman 7th Floor 12400 Wilshire Boulevard Los Angeles, CA 90025-1030			EXAMINER THAI, LUAN C	
			ART UNIT 2827	PAPER NUMBER

DATE MAILED: 05/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

10/616,827

Applicant(s)

KUMAMOTO ET AL.

Examiner

Luan Thai

Art Unit

2827

-- The MAILING DATE of this communication appears on th cover sheet with the c rrespondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-17 is/are allowed.
- 6) ☒ Claim(s) 18-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/10/03 & 10/31/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 18-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 2, respectively, of U.S. Patent No. 6,632,704. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed invention (claims 18-19) of the

present application is a mere broader version of the claimed invention (claims 1-2) of the above identified U.S. Patent with similar intended scope, thus allowing unjustified or improper timewise extension of the "right to exclude" granted by a U.S. Patent No. 6,632,704.

Claim Objections

3. Claim 25 is objected to because of the following informalities: the phrase "The apparatus of claim 23" in claim 25, should be changed to – The apparatus of claim 24-- since the limitation "passive component" firstly recites in claim 24, not in claim 23. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 18-23 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carney et al. (5,895,229 of record) in view of Chia et al. (6,081,997 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 18-23 and 27-29, Carney et al. teach a method comprising: placing an incomplete flip chip package into a mold (30), the incomplete chip package comprising a chip (12) mounted on a substrate (14) electrically coupled to the substrate by a flip chip process (re-flowed solder bumps 16), the chip having a top surface facing the substrate, a bottom surface opposite the top surface, and one or more side surfaces between the top and bottom surfaces; mating an upper mold portion (29) with the lower mold portion, the upper mold portion having an upper inner cavity forming a mold inner cavity enclosing the incomplete flip chip package, and forming a runner (60) between the upper and lower mold portions; injecting a predetermined amount of a liquid resin comprised silica spheres into the mold inner cavity through the runner (60), the resin encapsulating all the side surfaces, and filling a gap between the top surface of the chip and the adjacent portion of the upper surface, encapsulating the re-flowed solder bumps; and curing the resin to form a monolithic element having solidified resin. Carney et al. fail to teach the step of maintaining the mold at an elevated temperature for a predetermined period of time, wherein the elevated temperature being equal to or greater than the cure temperature of the filled liquid resin for the predetermined period of time.

The step of curing the liquid resin by maintaining the mold at an elevated temperature, however, is conventional in the art, as disclosed by Chia et al (Col. 6, lines 40+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to cure the liquid resin by maintaining the mold at

an elevated temperature as claimed since such resin cured method is conventionally applied in the art, as taught by Chia et al., and such application is held to be within the ordinary designing ability expected of a person skilled in the art.

4. Claims 24-26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carney et al. (5,895,229 of record) in view of Chia et al. (6,081,997 of record) and further in view of Baba et al. (6,071,755 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 24-26 and 30, the proposed method of Carney et al. and Chia et al. teaches the method steps as detailed above except for the package comprising a passive component (e.g., resistor or capacitor) electrically coupled with the substrate.

A semiconductor package comprising chip components and a passive component, however, is conventional in semiconductor package art as taught by Baba et al. In fact, Baba et al disclose a semiconductor package comprising chip components 31 including a passive component 53 (see figures 20-10-17, Col. 12, lines 35+) for the purpose of having a higher mounting density, obtaining a higher performance and function to allow a smaller electronic device to be realized (Col. 12, lines 41+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the proposed method of Carney et al. and Chia et al. to form a semiconductor package, which comprises not only active

devices (e.g., semiconductor chip) but also passive components (e.g., resistor, capacitor), since such package is conventional in the art, as taught by Baba et al., and such application is held to be within the ordinary designing ability expected of a person skilled in the art.

Allowable Subject Matter

1. Claims 1-17 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter:

The cited arts fail to teach or render obvious the process steps of coating the upper inner surface of the upper mold, and curing the liquid resin by maintaining the mold at an elevated temperature for a predetermined period of time, the elevated temperature being equal to or greater than the cure temperature of the filled liquid resin for the predetermined period of time, as recited in claims 1, 11 and 14, especially when these limitations are considered within the specific combination claimed.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is 571-272-1935. The examiner can normally be reached on 6:45 AM - 4:15 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Luan Thai', with a long horizontal flourish extending to the right.

Luan Thai
May 3, 2004